AMENDMENTS TO THE CLAIMS

Please amend the claims as noted below, without prejudice to subsequent renewal. The listing of claims below replaces all prior versions, and listings, of claims in the application.

These amendments introduce no new matter and support for the amendment is replete throughout the specification and claims as originally filed. These amendments are made without prejudice and are not to be construed as abandonment or dedication of the previously claimed subject matter, or agreement with any objection or rejection of record.

Listing of Claims:

1.-68. (Cancelled)

69. (Original) A composite material, comprising:

a plurality of nanowires; and

a small molecule or molecular matrix or a matrix comprising at least one polymer, which small molecule or molecular matrix or components thereof or which matrix comprising at least one polymer or components thereof are used to orient the nanowires.

70. (Original) A composite material, comprising one or more nanostructures and a polymeric matrix comprising a polysiloxane.

71. (Original) A composite material as in claim **70**, wherein the matrix comprises polydimethylsiloxane.

72. (Original) A composite material as in claim **70**, wherein the matrix comprises a copolymer between dimethylsiloxane and another siloxane.

73. (Original) A composite material as in claim **70**, wherein the one or more nanostructures comprise one or more of: nanowires, nanocrystals, branched nanowires, or nanotetrapods.

74. (Original) A composite material as in claim **70**, wherein the one or more nanostructures comprise one or more of: a metal, a ferroelectric material, a ferroelectric ceramic material, a perovskite-type material, a KDP-type material, a TGS-type material, a fluorescent material, a

semiconducting material, a material comprising a first element selected from group 2 of the periodic table and a second element selected from group 16, a material comprising a first element selected from group 12 and a second element selected from group 16, a material comprising a first element selected from group 13 and a second element selected from group 15, a material comprising a group14 element, or an alloy or a mixture thereof.

75. (Original) A composite material as in claim **74**, wherein the one or more nanostructures comprise one or more of: BaTiO3, SrTiO3, CaTiO3, KNbO3, PbTiO3, LiTiO3, LiTaO3, LiNbO3, Ba(1-x)CaxTiO3 where x is between 0 and 1, PbTi(1-x)ZrxO3 where x is between 0 and 1, KH2PO4, KD2PO4, RbH2PO4, RbH2AsO4, KH2AsO4, GeTe, tri-glycine sulfate, tri-glycine selenate, ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, Ge, Si, PbS, PbSe, PbTe, AlS, AlP, AlSb, or an alloy or a mixture thereof.

76. (Original) A composite material as in claim **70**, further comprising at least one surfactant or at least one solvent.

77. (Original) A shaped article of a composite material according to claim **70**.

78. (Original) An LED, laser, waveguide, or amplifier comprising a composite as in claim **70**.

79. (Currently amended) A composite material, comprising:

a smalln molecule or molecular matrix or a matrix comprising at least one organic polymer or inorganic glass; and

one or more branched nanowires, one or more inorganic nanowires, or a combination thereof, wherein the one or more inorganic nanowires are selected from the group consisting of semiconducting inorganic nanowires and ferroelectric inorganic nanowires, <u>which semiconducting inorganic nanowires do not comprise a magnetic material,</u> and wherein the one or more inorganic nanowires have an aspect ratio greater than about 10.

80. (Original) A composite material as in claim **79**, wherein the one or more branched nanowires comprise one or more nanotetrapods.

81. (Original) A composite material as in claim **79**, wherein the composite material comprises one or more inorganic nanowires and the one or more inorganic nanowires comprise a plurality of inorganic nanowires.

82. (Original) A composite material as in claim **81**, wherein the orientation of the nanowires is substantially nonrandom.

83. (Original) A composite material as in claim **82**, wherein the composite material is formed into a thin film, the thin film being substantially free of strain.

84. (Original) A composite material as in claim **82**, wherein the composite material is formed into a highly-strained stretched film.

85. (Original) A composite material as in claim **82**, wherein the composite material is formed into a thin film within which a majority of the nanowires have their long axes oriented substantially parallel to a surface of the film.

86. (Original) A composite material as in claim **82**, wherein the composite material is formed into a thin film within which a majority of the nanowires are oriented such that each has its long axis more nearly perpendicular than parallel to a surface of the film.

87. (Original) A composite material as in claim **82**, wherein the composite material is formed into a thin film within which a majority of the nanowires are oriented such that each has its long axis substantially perpendicular to a surface of the film.

88. (Original) A composite material as in claim **79**, wherein the ferroelectric inorganic nanowires comprise one or more of: ferroelectric ceramic, perovskite-type, KDP-type, or TGS-type nanowires.

89. (Original) A composite material as in claim **88**, wherein the ferroelectric inorganic nanowires comprise one or more of: BaTiO3, SrTiO3, CaTiO3, KNbO3, PbTiO3, LiTiO3, LiTaO3, LiNbO3, Ba(1-x)CaxTiO3 where x is between 0 and 1, PbTi(1-x)ZrxO3 where x is between 0 and 1, KH2PO4, KD2PO4, RbH2PO4, RbH2AsO4, KH2AsO4, GeTe, tri-glycine sulfate, or tri-glycine selenate nanowires.

90. (Original) A composite material as in claim **79**, wherein the semiconducting inorganic nanowires comprise one or more of: a material comprising a first element selected from

group 2 of the periodic table and a second element selected from group 16, a material comprising a first element selected from group 12 and a second element selected from group 16, a material comprising a first element selected from group 13 and a second element selected from group 15, a material comprising a group14 element, or an alloy or a mixture thereof.

91. (Original) A composite material as in claim **90**, wherein the semiconducting inorganic nanowires comprise one or more of: ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, Ge, Si, PbS, PbSe, PbTe, AlS, AlP, AlSb, or an alloy or a mixture thereof.

92. (Original) A composite material as in claim **79**, wherein the small molecule or molecular matrix comprises one or more of: N,N'-diphenyl-N,N'-bis (3-methylphenyl)-(1,1'biphenyl)-4,4'-diamine); (3-(4-biphenyl)-4-phenyl-5-tert-butylphenyl-1,2,4-triazole); tris-(8-hydroxyquinoline) aluminum; benzoic acid; phthalic acid; benzoin; hydroxyphenol; nitrophenol; chlorophenol; chloroaniline; or chlorobenzoamide.

93. (Original) A composite material as in claim **79**, wherein the at least one organic polymer comprises one or more of: a thermoplastic polymer, a polyolefin, a polyester, a polysilicone, a polyacrylonitrile resin, a polystyrene resin, polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, a fluoroplastic, a thermosetting polymer, a phenolic resin, a urea resin, a melamine resin, an epoxy resin, a polyurethane resin, an engineering plastic, a polyamide, a polyacrylate resin, a polyketone, a polyimide, a polysulfone, a polycarbonate, a polyacetal, a liquid crystal polymer, a main chain liquid crystal polymer, poly(hydroxynapthoic acid), a side chain liquid crystal polymer, poly <n-((4'(4"-cyanphenyl)phenoxy)alkyl)vinyl ether>, a conductive polymer, poly(3-hexylthiophene), poly[2-methoxy, 5-(2'-ethyl-hexyloxy)-p-phenylene-vinylene], poly(phenylene vinylene), or polyaniline.

94. (Original) A composite material as in claim **79**, wherein the one or more inorganic nanowires have an average diameter between about 2 nm and about 100 nm, between about 2 nm and about 5 nm, or between about 10 nm and about 50 nm.

95. (Original) A composite material as in claim **79**, wherein the one or more inorganic nanowires have an aspect ratio between about 10 and about 10,000, between about 20 and about 10,000, between about 50 and about 10,000, or between about 100 and about 10,000.

96. (Currently amended) A composite material, comprising:

a plurality of nanostructures; and

~~a small molecule or molecular matrix,~~ a glassy or crystalline inorganic matrix~~,~~ or a matrix comprising at least one polymer,

wherein the composite material is distributed on a first layer of a material that conducts substantially only electrons or substantially only holes.

97. (Original) A composite material as in claim **96**, wherein the composite and the first layer are in contact.

98. (Original) A composite material as in claim **96**, wherein the composite and the first layer are separated by a second layer, the second layer comprising a material that conducts electrons or holes or both electrons and holes.

99. (Original) A composite material as in claim **96**, wherein the first layer is distributed on an electrode.

100. (Original) A composite material as in claim **99**, wherein the first layer and the electrode are in contact.

101. (Original) A composite material as in claim **99**, wherein the first layer and the electrode are separated by a third layer, the third layer comprising a material that conducts electrons or holes or both electrons and holes.

102. (Currently amended) A composite material, comprising:

a matrix, wherein the matrix comprises at least one polymer, comprises at least one glass, or is a small molecule or molecular matrix, which small molecule or molecular matrix conducts both electrons and holes, conducts substantially only electrons, is semiconducting, or is substantially nonconductive; and

one or more nanostructures, the one or more nanostructures each comprising a core and at least one shell, the core comprising a first semiconducting material having a

conduction band and a valence band, the shell comprising a second semiconducting material having a conduction band and a valence band, and the first and second materials having a type I band offset, wherein the nanostructures are dispersed in the matrix.

103. (Original) A composite material as in claim **102**, wherein the conduction band of the first material is lower than the conduction band of the second material, and the valence band of the first material is higher than the valence band of the second material.

104. (Original) A composite material as in claim **102**, wherein the conduction band of the first material is higher than the conduction band of the second material, and the valence band of the first material is lower than the valence band of the second material.

105. (Cancelled)

106. (Currently amended) A composite material as in claim **102**, wherein the matrix comprising at least one polymer or at least one glass conducts both electrons and holes, conducts substantially only holes, conducts substantially only electrons, is semiconducting, or is substantially nonconductive.

107. (Original) A composite material as in claim **102**, wherein the one or more nanostructures comprise one or more of: nanocrystals, nanowires, branched nanowires, or nanotetrapods.

108. (Original) A composite material, comprising:

one or more nanostructures comprising a first semiconducting material having a conduction band and a valence band; and

a matrix comprising a second semiconducting material having a conduction band and a valence band, wherein the first and second materials have a type I band offset.

109. (Original) A composite material as in claim **108**, wherein the conduction band of the first material is lower than the conduction band of the second material, and the valence band of the first material is higher than the valence band of the second material.

110. (Original) A composite material as in claim **108**, wherein the conduction band of the first material is higher than the conduction band of the second material, and the valence band of the first material is lower than the valence band of the second material.

111. (Original) A composite material as in claim **108**, wherein each nanostructure comprises substantially a single material, the single material being the first material.

112. (Original) A composite material as in claim **108**, wherein each nanostructure comprises a core and at least one shell, the core comprising the first material.

113. (Original) A composite material as in claim **108**, wherein each nanostructure comprises a core and at least one shell, the shell comprising the first material.

114. (Original) A composite material as in claim **108**, wherein the matrix comprises at least one polymer, comprises at least one glass, or is a small molecule or molecular matrix.

115. (Original) A composite material as in claim **108**, wherein the one or more nanostructures comprise one or more of: nanocrystals, nanowires, branched nanowires, or nanotetrapods.

116. (Original) A composite material, comprising:

a matrix; and

one or more nanostructures, the one or more nanostructures each comprising a core and at least one shell, the core comprising a first semiconducting material having a conduction band and a valence band, the shell comprising a second semiconducting material having a conduction band and a valence band, and the first and second materials having a type II band offset.

117. (Original) A composite material as in claim **116**, wherein the conduction band of the first material is lower than the conduction band of the second material, and the valence band of the first material is lower than the valence band of the second material.

118. (Original) A composite material as in claim **116**, wherein the conduction band of the first material is higher than the conduction band of the second material, and the valence band of the first material is higher than the valence band of the second material.

119. (Original) A composite material as in claim **116**, wherein the matrix comprises at least one polymer, comprises at least one glass, or is a small molecule or molecular matrix.

120. (Original) A composite material as in claim **116**, wherein the matrix conducts both electrons and holes, conducts substantially only holes, conducts substantially only electrons, is semiconducting, or is substantially nonconductive.

121. (Original) A composite material as in claim **116**, wherein the one or more nanostructures comprise one or more of: nanocrystals, nanowires, branched nanowires, or nanotetrapods.

122. (Original) A composite material, comprising:

one or more nanostructures comprising a first semiconducting material having a conduction band and a valence band; and

a matrix comprising a second semiconducting material having a conduction band and a valence band, wherein the first and second materials have a type II band offset.

123. (Original) A composite material as in claim **122**, wherein the conduction band of the first material is lower than the conduction band of the second material, and the valence band of the first material is lower than the valence band of the second material.

124. (Original) A composite material as in claim **122**, wherein the conduction band of the first material is higher than the conduction band of the second material, and the valence band of the first material is higher than the valence band of the second material.

125. (Original) A composite material as in claim **122**, wherein each nanostructure comprises substantially a single material, the single material being the first material.

126. (Original) A composite material as in claim **122**, wherein each nanostructure comprises a core and at least one shell, the core comprising the first material.

127. (Original) A composite material as in claim **122**, wherein each nanostructure comprises a core and at least one shell, the shell comprising the first material.

128. (Original) A composite material as in claim **127**, wherein the core comprises a third semiconducting material having a conduction band and a valence band, the third and first materials having a type II band offset.

129. (Original) A composite material as in claim **122**, wherein the matrix comprises at least one polymer, comprises at least one glass, or is a small molecule or molecular matrix.

130. (Original) A composite material as in claim **122**, wherein the one or more nanostructures comprise one or more of: nanocrystals, nanowires, branched nanowires, or nanotetrapods.

131. (Original) A composite material, comprising:

a plurality of nanostructures; and

a small molecule or molecular matrix or a matrix comprising at least one polymer, the at least one polymer or constituents of the small molecule or molecular matrix having an affinity for at least a portion of a surface of the nanostructures.

132. (Original) A composite material, comprising:

a plurality of nanostructures, wherein the nanostructures each comprise one or more surface ligands; and

a small molecule or molecular matrix or a matrix comprising at least one polymer, the at least one polymer or constituents of the small molecule or molecular matrix having an affinity for the one or more surface ligands.

133. (Original) A composite material as in claim **132**, wherein the one or more surface ligands each comprise at least one small molecule found in the small molecule or molecular matrix or a derivative thereof or at least one monomer found in the at least one polymer or a derivative thereof.

134. (Original) A composite material as in claim **132**, wherein the one or more surface ligands each comprise at least one functional group selected from the group consisting of: an amine, a phosphine, a phosphine oxide, a phosphonate, a phosphonite, a phosphinic acid, a phosphonic acid, a thiol, an alcohol, and an amine oxide.

135. (Original) A composite material, comprising: one or more ferroelectric nanowires or one or more ferroelectric nanoparticles and a small molecule or molecular matrix or a matrix comprising one or more polymers.

136. (Original) A composite material as in claim **135**, wherein the one or more ferroelectric nanowires or nanoparticles comprise one or more of: ferroelectric ceramic, perovskite-type, KDP-type, or TGS-type nanowires or nanoparticles.

137. (Original) A composite material as in claim **136**, wherein the one or more ferroelectric nanowires or nanoparticles comprise one or more of: BaTiO3, SrTiO3, CaTiO3, KNbO3, PbTiO3, LiTiO3, LiTaO3, LiNbO3, Ba(1-x)CaxTiO3 where x is between 0 and 1, PbTi(1-x)ZrxO3 where x is between 0 and 1, KH2PO4, KD2PO4, RbH2PO4, RbH2AsO4, KH2AsO4, GeTe, tri-glycine sulfate, or tri-glycine selenate nanowires or nanoparticles.

138. (Original) A composite material as in claim **135**, wherein the one or more polymers comprise one or more of: an inorganic polymer, a polysiloxane, a polycarbonessiloxane, a polyphosphazene, an organic polymer, a thermoplastic polymer, a polyolefin, a polyester, a polysilicone, a polyacrylonitrile resin, a polystyrene resin, polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, a fluoroplastic, a thermosetting polymer, a phenolic resin, a urea resin, a melamine resin, an epoxy resin, a polyurethane resin, an engineering plastic, a polyamide, a polyacrylate resin, a polyketone, a polyimide, a polysulfone, a polycarbonate, a polyacetal, a liquid crystal polymer, a main chain liquid crystal polymer, poly(hydroxynapthoic acid), a side chain liquid crystal polymer, or poly <n-((4'(4"-cyanphenyl)phenoxy)alkyl)vinyl ether>.

139. (Original) A composite material as in claim **135**, wherein the small molecule or molecular matrix comprises one or more of: N,N'-diphenyl-N,N'-bis (3-methylphenyl)-(1,1'biphenyl)-4,4'-diamine); (3-(4-biphenyl)-4-phenyl-5-tert-butylphenyl-1,2,4-triazole); tris-(8-hydroxyquinoline) aluminum; benzoic acid; phthalic acid; benzoin; hydroxyphenol; nitrophenol; chlorophenol; chloroaniline; or chlorobenzoamide.

140. (Original) A composite material as in claim **135**, wherein the matrix comprises one or more additives.

141. (Original) A composite material as in claim **140**, wherein the one or more additives comprise one or more of: a surfactant, a plasticizer, a catalyst, an antioxidant, or a strengthening fiber.

142. (Original) A composite material as in claim **135**, wherein the one or more ferroelectric nanowires or nanoparticles are included in sufficient quantity that the composite material has a dielectric constant of at least about 2, at least about 5, or at least about 10.

143. (Original) A composite material as in claim **135**, wherein the one or more ferroelectric nanowires or nanoparticles are included in the composite in an amount greater than 0% and less than about 90% by volume.

144. (Original) A composite material as in claim **135**, wherein the one or more ferroelectric nanowires have an average diameter between about 2 nm and about 100 nm, between about 2 nm and about 5 nm, or between about 10 nm and about 50 nm.

145. (Original) A composite material as in claim **135**, wherein the one or more ferroelectric nanowires have an aspect ratio between about 1.5 and about 10000, between about 1.5 and about 10, between about 10 and about 20, between about 20 and about 50, between about 50 and about 10,000, or between about 100 and about 10,000.

146. (Original) A composite material as in claim **135**, wherein the one or more ferroelectric nanoparticles have an average diameter less than about 200 nm.

147. (Original) A composite material as in claim **135**, wherein the one or more ferroelectric nanoparticles have an aspect ratio between about 0.9 and about 1.2.

148. (Original) A film formed from a composite material as described in claim **135**.

149. (Original) A substrate to which a composite material as in claim **135** has been applied.

150. (Original) A substrate as in claim **149**, wherein the substrate comprises silicon, glass, an oxide, a metal, or a plastic.

151. (Original) A composition comprising particles of the composite material as in claim **135**, at least one solvent, and at least one glue agent.

152. (Original) A composition as in claim **151**, wherein the particles of the composite material have an average diameter between about 20 nm and about 20 micrometers.

153. (Original) A composition as in claim **151**, wherein the glue agent is a polymer.

154. (Original) A film formed from a composition as described in claim **151**.

155. (Original) A composition comprising one or more ferroelectric nanowires or nanoparticles, at least one solvent, and one or more polymers.

156. (Original) A composition as in claim **155**, wherein the one or more ferroelectric nanowires or nanoparticles comprise one or more of: ferroelectric ceramic, perovskite-type, KDP-type, or TGS-type nanowires or nanoparticles.

157. (Original) A composition as in claim **156**, wherein the one or more ferroelectric nanowires or nanoparticles comprise one or more of: BaTiO3, SrTiO3, CaTiO3, KNbO3, PbTiO3, LiTiO3, LiTaO3, LiNbO3, Ba(1-x)CaxTiO3 where x is between 0 and 1, PbTi(1-x)ZrxO3 where x is between 0 and 1, KH2PO4, KD2PO4, RbH2PO4, RbH2AsO4, KH2AsO4, GeTe, tri-glycine sulfate, or tri-glycine selenate nanowires or nanoparticles.

158. (Original) A composition as in claim **155**, wherein the one or more polymers comprise one or more of: an inorganic polymer, a polysiloxane, a polycarbonessiloxane, a polyphosphazene, an organic polymer, a thermoplastic polymer, a polyolefin, a polyester, a polysilicone, a polyacrylonitrile resin, a polystyrene resin, polyvinyl chloride, polyvinylidene chloride, polyvinyl acetate, a fluoroplastic, a thermosetting polymer, a phenolic resin, a urea resin, a melamine resin, an epoxy resin, a polyurethane resin, an engineering plastic, a polyamide, a polyacrylate resin, a polyketone, a polyimide, a polysulfone, a polycarbonate, a polyacetal, a liquid crystal polymer, a main chain liquid crystal polymer, poly(hydroxynapthoic acid), a side chain liquid crystal polymer, or poly <n-((4'(4"-cyanphenyl)phenoxy)alkyl)vinyl ether>.

159. (Original) A composition as in claim **155**, wherein the one or more ferroelectric nanowires have an average diameter between about 2 nm and about 100 nm, between about 2 nm and about 5 nm, or between about 10 nm and about 50 nm.

160. (Original) A composition as in claim **155**, wherein the one or more ferroelectric nanowires have an aspect ratio between about 1.5 and about 10000, between about 1.5 and about 10, between about 10 and about 20, between about 20 and about 50, between about 50 and about 10,000, or between about 100 and about 10,000.

161. (Original) A composition as in claim **155**, wherein the one or more polymers are soluble in the at least one solvent.

162. (Original) A composition as in claim **155**, wherein the one or more polymers comprise emulsion polymerized polymer particles suspended in the at least one solvent.

163. (Original) A composition as in claim **162**, further comprising at least one glue agent.

164. (Original) A composition as in claim **155**, wherein the one or more polymers comprise oligomers soluble in the at least one solvent.

165. (Original) A composition as in claim **164**, further comprising at least one cross-linking agent.

166. (Original) A composition as in claim **155**, wherein the at least one solvent is water or an organic solvent.

167. (Original) A composition as in claim **155**, further comprising at least one surfactant.

168. (Original) A composition as in claim **167**, wherein the at least one surfactant is selected from the group consisting of a cationic surfactant, an anionic surfactant, and a nonionic surfactant.

169. (Original) A composition as in claim **155**, further comprising at least one humectant.

170. (Original) A composition as in claim **169**, wherein the at least one humectant is selected from the group consisting of a glycol, a diol, a sulfoxide, a sulfone, an amide, and an alcohol.

171. (Original) A composition as in claim **155**, wherein the composition is a liquid suitable for use as an inkjet printing ink or a paste suitable for use as a screen printing ink.

172. (Original) A composition as in claim **155**, wherein the composition has a consistency that makes the composition suitable for applying to a surface by brushing or by spraying.

173. (Original) A substrate to which a composition as in claim **155** has been applied.

174. (Original) A substrate as in claim **173**, wherein the substrate comprises silicon, glass, an oxide, a metal, or a plastic.

175. (Original) A film formed from a composition as described in claim **155**.

176. (Original) A composition, comprising one or more ferroelectric nanowires or nanoparticles and at least one monomeric precursor of at least one polymer.

177. (Original) A composition as in claim **176**, wherein the ferroelectric nanowires or nanoparticles comprise one or more of: ferroelectric ceramic, perovskite-type, KDP-type, or TGS-type nanowires or nanoparticles.

178. (Original) A composition as in claim **177**, wherein the ferroelectric nanowires or nanoparticles comprise one or more of: BaTiO3, SrTiO3, CaTiO3, KNbO3, PbTiO3, LiTiO3, LiTaO3, LiNbO3, Ba(1-x)CaxTiO3 where x is between 0 and 1, PbTi(1-x)ZrxO3 where x is between 0 and 1, KH2PO4, KD2PO4, RbH2PO4, RbH2AsO4, KH2AsO4, GeTe, tri-glycine sulfate, or tri-glycine selenate nanowires or nanoparticles.

179. (Original) A composition as in claim **176**, further comprising at least one solvent.

180. (Original) A composition as in claim **176**, further comprising at least one catalyst.

181. (Original) A substrate to which a composition as in claim **176** has been applied.

182. (Original) A substrate as in claim **181**, wherein the substrate comprises silicon, glass, an oxide, a metal, or a plastic.

183. (Original) A film formed from a composition as described in claim **176**.

184.-198. (Cancelled)

199. (New) A composite material, comprising:

a small molecule or molecular matrix or a matrix comprising at least one inorganic glass; and

one or more branched nanowires, one or more inorganic nanowires, or a combination thereof, wherein the one or more inorganic nanowires are selected from the group consisting of semiconducting inorganic nanowires and ferroelectric inorganic nanowires, and wherein the one or more inorganic nanowires have an aspect ratio greater than about 10.